Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (Original) A ring network, comprising:

a number of network elements, each including first and second switch fabrics;

at least two uni-directional busses coupled between the first and second switch fabrics;

a number of ring segments coupled between adjacent network elements to form first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is the working route and the other route is the protection route;

wherein the first and second switch fabrics of each network element are associated with one of the first and second routes; and

wherein the first and second switch fabrics of each network element separately track the status of a number of virtual connections such that when an error is detected by one of the switch fabrics associated with a working route for a virtual connection, the switch fabric detecting the error communicates the change in state for the virtual connection to the other switch fabric over one of the first and second uni-directional busses to be used in a switching decision.

2. (Original) The ring network of claim 1, wherein the network elements each include two ring interface modules having:

a microprocessor;

a physical layer device that detects errors on a route of the ring network and communicates the errors to the microprocessor; and

a switch fabric, responsive to the microprocessor, that generates error cells for transmission to downstream network elements and this network element on affected virtual connections that use the route.

3. (Original) The ring network of claim 2, wherein the microprocessor executes instructions to identify a set of virtual connections that are affected by a detected error and to instruct the switch fabric to generate error cells for each of the virtual connections in the set.

4. (Original) The ring network of claim 2, wherein the switch fabric includes an error cell generator that generates error cells that include at least one bit to indicate one of a number of possible states of one of the first and second routes.

5. (Original) The ring network of claim 1, wherein the first and second switch fabrics and the at least two uni-directional busses are incorporated in an access interface module and wherein the first and second switch fabrics each include a table that tracks the state of a number of virtual connections.

6. (Original) The ring network of claim 5, wherein the first and second switch fabrics each include a table that tracks the state of each virtual connection based on error cells and data cells received on the virtual connections.

7. (Original) A network element for a ring network having first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is the working route and the other route is the protection route, the network element comprising:

a first ring interface module that is coupled to the first route;

a second ring interface module that is coupled to the second route;

an access interface module having first and second switch fabrics that are coupled to the first and second interface modules, respectively;

first and second uni-directional busses that provide a communication path between the first and second switch fabrics;

wherein the ring interface modules generate error cells when an error is detected on the route associated with the ring interface module that affects one or more of the virtual connections transmitted on the route; and

wherein the first and second switch fabrics of the access interface module track the state of the virtual connections such that when an error cell is received by a switch fabric that is associated with a working route for a virtual connection, the switch fabric communicates the change in state of the virtual connection to the other switch fabric over one of the first and second uni-directional busses to be used in making a switching decision.

8. (Original) The network element of claim 7, wherein the two ring interface modules each include:

a microprocessor;

a physical layer device that detects errors on a route of the ring network and communicates the errors to the microprocessor; and

a switch fabric, responsive to the microprocessor, that generates error cells for transmission to downstream network elements and this network element on affected virtual connections that use the route.

9. (Original) The network element of claim 8, wherein the microprocessor executes instructions to identify a set of virtual connections that are affected by a detected error and to instruct the switch fabric to generate error cells for each of the virtual connections in the set.

10. (Original) The network element of claim 8, wherein the switch fabric includes an error cell generator that generates error cells that include at least one bit to indicate one of a number of possible states of one of the first and second routes.

11. (Original) The network element of claim 7, wherein the first and second switch fabrics each include a table that tracks the state of a number of virtual connections.

12. (Original) The network element of claim 11, wherein the first and second switch fabrics each include a table that tracks the state of each virtual connection based on error cells and data cells received on the virtual connections.

13. (Original) A network element for a ring network having first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is the working route and the other route is the protection route, the network element comprising:

a first ring interface module that is coupled to the first route;

a second ring interface module that is coupled to the second route;

an access interface module having first and second switch fabrics that are coupled to the first and second interface modules, respectively;

first and second uni-directional busses that provide a communication path between the first and second switch fabrics;

wherein the first and second switch fabrics of the access interface module track the state of the virtual connections such that when a change in state of a virtual connection is detected by one of the first and second switch fabrics, the one switch fabric communicates the detected change to the other switch fabric over one of the first and second uni-directional busses to be used in making a switching decision.

14-19. (Canceled)

20. (Original) A method for protection switching in a ring network having first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is the working route and the other route is the protection route, the method comprising:

detecting an error in one of the first and second routes (the "errored route");

generating error cells for each virtual connection that is affected by the detected error;

injecting the error cells to be transmitted downstream on the errored route;

receiving the error cells at a first switch fabric at a downstream network element associated with the errored route;

communicating the change in state of the errored route to a second switch fabric of the downstream network element associated with the other of the first and second routes (the "other route");

determining whether the state of the other route is acceptable for a protection switch;

when the state of the other route is acceptable, and the other route is configured as the protection route for a virtual connection, automatically configuring the second switch fabric to establish the other route to be the working route for the virtual connection;

when the state of the other route is not acceptable, and the other route is configured as the protection route for a virtual connection, responding to the first switch fabric with a message that the protection switch is denied; and

notifying a processor associated with the first and second switch fabrics that the protection switch was denied.

21. (Original) The method of claim 20, wherein generating error cells comprises:

identifying a set of virtual connections that are affected by the detected error; and

generating an error cell for each virtual connection in the set.

22. (Original) The method of claim 21, wherein identifying a set of virtual connections comprises identifying virtual connections that are continued by a network element that detects the error.

23. (Original) The method of claim 21, wherein identifying a set of virtual connections comprises looking in a table of a network element that detected the error to determine a set of virtual connections that are affected by the detected error.

24. (Original) The method of claim 20, wherein generating error cells comprises:

identifying a set of virtual connections that are affected by the detected error;

generating a code signal that corresponds to the set of virtual connections;

passing the code signal to a switch fabric of a network element that detected the error; and

generating an error cell for each virtual connection based on the code signal.

25. (Original) The method of claim 20, and further comprising arbitrating contention between error cells and cells that carry traffic between endpoints.

26. (Original) The method of claim 20, and further comprising extracting information from at least one error cell at the downstream network element that received the error cell to determine the nature of the error.

27. (Original) The method of claim 20, wherein generating error cells comprises generating error cells that include at least one bit to indicate one of a number of possible states of the errored route.

28. (Original) The method of claim 20, and further comprising tracking a state of the first and second routes for each virtual connection by updating a table at the downstream network element.

29. (Original) The method of claim 20, wherein detecting an error comprises detecting a loss of signal.

30. (Original) The method of claim 20, wherein detecting an error comprises detecting degradation in signals transmitted along a route of the ring network.

31. (Original) A method for protection switching in a ring network having first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is the working route and the other route is the protection route, the method comprising:

monitoring the first and second routes for changes in at least one selected condition at first and second switch fabrics of a network element;

communicating a change in state of one of the first and second routes (the "changed route") detected by one of the first and second switch fabrics to the other of the first and second switch fabrics associated with the other of the first and second routes (the "other route");

determining whether the state of the other route is acceptable for a protection switch;

when the state of the other route is acceptable, and the other route is configured as the protection route for a virtual connection, automatically configuring the other of the first and second switch fabrics to establish the other route to be the working route for the virtual connection;

when the state of the other route is not acceptable, and the other route is configured as the protection route for a virtual connection, responding to the one of the first and second switch fabrics with a message that the protection switch is denied; and

notifying a processor associated with the first and second switch fabrics that the protection switch was denied.

32. (Original) The method of claim 31, wherein monitoring the first and second routes for changes in at least one selected condition comprises monitoring the first and second routes for at least one of signal failure, signal degradation and ring fault.

33. (Original) The method of claim 31, wherein communicating a change in state comprises communicating a change in state over a uni-directional bus.

34. (Original) The method of claim 31, wherein determining whether the state of the other route is acceptable for a protection switch comprises determining whether the state of the other route is qualitatively better than the state of the changed route.

35-37. (Canceled)

38. (Original) A method for protection switching in a ring network having first and second routes for transporting cells using virtual connections wherein, for each virtual connection, one route is the working route and the other route is the protection route, the method comprising:

detecting an error in one of the first and second routes (the "errored route");

generating error cells for each virtual connection that is affected by the detected error;

injecting the error cells to be transmitted downstream on the errored route;

receiving the error cells at a first switch fabric at a downstream network element associated with the errored route;

communicating the change in state of the errored route to a second switch fabric of the downstream network element associated with the other of the first and second routes (the "other route");

determining whether the state of the other route is acceptable for a protection switch;

when the state of the other route is acceptable, and the other route is configured as the protection route for a virtual connection, automatically configuring the second switch fabric to establish the other route to be the working route for the virtual connection; and

when the errored route returns to an acceptable condition, configuring the first switch fabric to establish the errored route as the working route for the virtual connection.

39. (Original) The method of claim 38, wherein injecting error cells comprises injecting cells that indicate a condition of the virtual connection.